

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/EP2004/014772	International filing date (day/month/year) 22.12.2004	Priority date (day/month/year) 26.01.2004	
International Patent Classification (IPC) or national classification and IPC C11C3/10, A23D9/00, A23D7/00			
Applicant UNILEVER N.V. et al.			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> sent to the applicant and to the International Bureau) a total of sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 30.03.2005		Date of completion of this report 22.12.2005	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer Muller, I Telephone No. +49 89 2399- 	

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP2004/014772

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1-34 as originally filed

Claims, Numbers

1-16 as originally filed

Drawings, Sheets

1/3-3/3 as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP2004/014772

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1-16
Inventive step (IS)	Yes: Claims	
	No: Claims	1-16
Industrial applicability (IA)	Yes: Claims	1-16
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V.

- 1 The following documents are referred to in this communication:

D1 : PH BERBEN, C GROEN, MW CHRISTENSEN, HC HOLM:

"Interesterification with immobilized enzymes" SOCIETY OF CHEMICAL INDUSTRY, [Online] 16 February 2001 (2001-02-16), XP002286715

Retrieved from the Internet:

URL:www.soci.org/SCI/publications/2001/pdf /pb88.pdf>; [retrieved on 2004-06-24]

D2 : NIELSEN P M: "A NATURAL VEGETABLE FAT" OILS AND FATS INTERNATIONAL, INTERNATIONAL TRADE PUBLICATIONS, REDHILL,, GB, vol. 18, no. 4, July 2002 (2002-07), pages 18-19, XP008025554 ISSN: 0267-8853

D3 : TORRES C F ET AL: "CATALYTIC TRANSESTERIFICATION OF CORN OIL AND TRISTEARIN USING IMMOBILIZED LIPASES FROM THERMOMYCES LANUGINOSA" JOURNAL OF THE AMERICAN OIL CHEMISTS' SOCIETY, AMERICAN OIL CHEMISTS' SOCIETY. CHAMPAIGN, US, vol. 79, no. 8, August 2002 (2002-08), pages 775-781, XP001124617 ISSN: 0003-021X

D4 : H. ZHANG, X. XU, J. NILSSON, H. MU, J. ADLER-NISSEN, C.-E. HOY: "Production of Margarine Fats by Enzymatic Interesterification with Silica-Granulated Thermomyces lanuginosa Lipase in a Large-Scale Study" JOURNAL OF THE AMERICAN OIL CHEMISTS' SOCIETY, vol. 78, no. 1, 2001, pages 57-64, XP001182133 US

D5 : C. R. TORRES, F. MUNIR, L. P. LESSARD, C. G. HILL JR.: "Lipase-Mediated Acidolysis of Tristearin with CLA in a Packed-Bed Reactor: A Kinetic Study" JOURNAL OF THE AMERICAN OIL CHEMISTS' SOCIETY, vol. 79, no. 7, 2002, pages 655-661, XP001182205 US

2 Preliminary Remarks

The process related features defined by means of the parameters Ra, Re as well as the catalyst activity expressed in IUN as used throughout the claims 1-16 do not allow a clear delimitation of the present subject-matter from the prior art (Art. 6 PCT and PCT International Search and Preliminary Examination Guidelines Chapter 5.36).

Moreover, from the specification page 24, middle paragraphs, it appears that the degree of conversion Re is in relation with the change of triglycerides as a whole

and not relating, as defined in claim 1, to the terminal position only, leading to a lack of clarity as to the meaning of Re, i.e. lack of clarity of the claimed subject-matter (Art. 6 PCT).

- 3 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1-10 is not new in the sense of Article 33(2) PCT.

No delimitation is apparent from D1 disclosing on page 2, paragraph 2-7, the exposure of feedstocks (a mixture of soybean oil and hardened soybean oil or a mixture of palm stearin and coconut oil) to Lipozyme TL IM at a catalyst loading of between 2 and 14 wt.%, the reactor temperature being between 60 and 90°C, no additional water being added, the enzyme being applied in both batch and fixed bed reactor, in which approximately 18% of fatty acids at sn-2 position is rearranged; D2 disclosing on page 19, interesterification of palm oil or stearin, palm kernel and coconut oil with Lipozyme TL IM (middle col. 7th paragraph) in less than 1 hour (left column, third paragraph), the process working at 70°C (middle column, third paragraph); D3, disclosing transesterification of corn oil and tristearin with Lipozyme TL IM (at 10% loading) during 48 hours (cf. page 775, right column); D4, disclosing interesterification of palm stearin and coconut oil in a batch reactor with Lipozyme TL IM (dosage 10%, during 6 hrs at 60°C), see page 57, right col. and page 58, left col. in particular; D5 discloses acidolysis of tristearin with CLA in a packed-bed reactor with Lipozyme TL IM in a pseudo space time of 0,6 hrs. at 75°C after which 10% of the sn-2 positions were rearranged by CLA (cf. abstract).

- 4 The same objection of lack of novelty applies to the triglyceride fat defined in present independent claim 11 (cf. the fats resulting from the processes disclosed in D1-D5 above) as well as the food products comprising the same as defined in claim 16 and the use of an aggregate of *Thermomyces lanuginosa* lipase as defined in present independent claim 15.
- 5 According to the specification on page 4, second paragraph, the present application aims at a process for rearranging the fatty acids on the triglyceride moiety over the terminal and middle positions. From the prior art documents D1-D5 is known that the Lipozyme TL IM lipase catalyst, which is the same as used in the examples of the present application and which is a commercial preparation, is a 1,3 specific enzyme. Documents D1 and D5 moreover explicitly refer to a

rearrangement in sn-2 position of 10%, respectively 18% (cf. item 2 above) which fall under the definition of both the conversion degree Re and Ra as defined in the present claims 1, 11 and 15.

In case that the increase of middle position randomisation as referred to on page 7, first paragraph of the specification, differs from the prior art processes and the resulting fat products, essential features relating to experimental conditions appear to be missing in the definition of the subject-matter of the independent claims.

At present by use of afore noted process parameters, the claims merely appear to define the underlying technical problem, which is an increase of middle position randomisation when exposing a triglyceride fat to a lipase catalyst from *Thermomyces lanuginosa* (Guidelines, Chapter 5.35).

- 6 The dependent claims 12-14 do not appear to contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT). Dependent claims are only considered new and involving an inventive step when referring to a new and inventive independent claim (Rule 6.4 PCT).
- 7 Attention is drawn to the fact that a positive preliminary examination report for the dependent claims can only be established when the requirements of the PCT concerning novelty and inventive step for the independent claims are complied with.
- 8 In case of filing amendments, the Applicant is requested to discuss the technical features leading to a clear delimitation of the subject-matter of the application from D1-D5 as well as the new and non-obvious technical effect achieved thereby.